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EXAMINER	
STOREY, WILLIAM C	
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2625	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/805,324	KITAMURA ET AL.	
	Examiner	Art Unit	
	WILLIAM C. STOREY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3, 4, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura et al. (US 6341843), hereinafter referred to as Takemura, in view of Kato et al. (US 6009845), hereinafter referred to as Kato.

Regarding claim 1, Takemura discloses A printing apparatus which performs printing by scanning a carriage that supports a printhead having a plurality of printing elements arrayed in a predetermined direction (figure 4, column 13, line 22), on a printing medium in a direction perpendicular to the predetermined direction (column 9, lines 44-45), comprising: a buffer memory which has a storage area corresponding to each printing element and stores printing data stored in said printing data memory (column 16, 55-57); a head parameter unit which stores information on a number of concurrently drivable printing elements according to distributed driving for the printhead (column 37, lines 60-61, column 38, lines 63-67, column 41, lines 7-13. Takemura discloses printing at different resolutions, and correspondingly the nozzles printing with a different driving sequence. For example, Takemura discloses driving every 2 nozzles in sequence, which reads on claimed wherein the printhead performs distributed driving for a predetermined number of nozzles, as disclosed at column 56, lines 59-61. This

taken with fig. 43d for 360dpi (top of page), for example, shows two nozzles used concurrently. Thus, there are a number of concurrently drivable printing elements according to distributed driving. In addition, col. 48, lines 59-67 and col. 49, lines 1-10, lines 45-50, lines 60-65 show more parameters containing information on a number of concurrently drivable printing elements (nozzles.) Tables are pre-stored that pertain to driving of the nozzles. In addition, data can be modified and it would have at least been obvious to one of ordinary skill in the art to save that modified data if necessary in order to be able to perform printing quicker for the similar scenario without have to wait for extra processing and calculation. Similarly, buffer control tables are sent and registered in the printer (col. 56, lines 13-16) and it would have similarly been at least obvious to store that information for further use that would be fulfilled quicker. As the printing system stores parameters for the head it is or inherently contains a head parameter unit.); and a buffer controller which controls, in accordance with the information stored in said head parameter unit, processing of reading out the printing data stored in said printing data memory and storing the printing data in said buffer memory, and processing of reading out the printing data stored in said buffer memory (column 53, lines 35-38, column 16, lines 55-57, 62-64, column 54, lines 18-19, 57-58, column 55, lines 5-9. Takemura discloses that print head configuration determines buffer read out and placement. Since Takemura also disclosed read out and placement from the print data store to the buffer based on the storage locations dictated in the print buffer, and that the head configuration dictated gaps in the buffer, then this would read on claimed in accordance with the information stored in said head parameter unit, processing of

reading out the printing data stored in said printing data memory and storing the printing data in said buffer memory. Takemura discloses that the buffer readout sequence is change in correspondence with the change in nozzle firing sequence; as disclosed at column 82, lines 15-18, column 83, lines 25-34 and figure 47.); and driving control means for controlling the distributed driving of the plurality of printing elements in the printhead according to the information stored in said head parameter unit (it was disclosed earlier how information about print head driving is stored (thus inherently driving the plurality of printing elements in the printhead). Fig. 43a, col. 49, lines 51-65 disclose an example of how the information stored about driving the elements is used to provide control for the driving control means. In addition, as it was discussed previously how the modifications to the pre-stored information could be stored and the information for distributed driving could thus be stored and used for control. Inherently, as this information is used to print and drive the print head and nozzles, there is a driving control means.)

Takemura did not specifically disclose a printing data memory which stores printing data of a raster format. However, the examiner maintains that it was well known in the art to provide a printing data memory which stores printing data of a raster format, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses a printing data memory which stores printing data of a raster format (column 8, lines 10-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing a printing data memory which stores printing data of a raster format, as taught by Kato, for the purpose of providing the data in the print data store in a well known format.

Regarding claim 3, Takemura and Kato disclose everything as applied above for claim 1. Takemura did not specifically disclose the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory. However, the examiner maintains that it was well known in the art to provide the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory (figure 3, column 8, lines 26-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory, as taught by Kato, for the purpose of providing aligning the data in a more vertical arrangement to match the alignment of nozzles in a near-vertical arrangement.

Regarding claim 4, Takemura and Kato disclose everything as applied above for claim 1. Takemura did not specifically disclose reading out the printing data stored in

said buffer from each address. However, the examiner maintains that it was well known in the art to provide reading out the printing data stored in said buffer from each address, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses the buffer controller reading out the printing data stored in said buffer from each address (column 8, lines 28-35, column 9, lines 13-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing reading out the printing data stored in said buffer from each address, as taught by Kato, for the purpose of providing matched access to print data.

Regarding claim 6, Takemura and Kato disclose everything as applied above for claim 4. However, Takemura fails to disclose wherein said buffer controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory. However, the examiner maintains that it was well known in the art to provide wherein said buffer controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory, as taught by Kato.

In addition, Kato discloses at the print timing, a set of data comprising of a plurality of bytes, which comprises bits, for C, M, Y, and K color nozzles, which are used for sequential addresses, are read from the image buffer, and at the same time, are transferred to the head data register, which reads on claimed wherein said buffer

controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory, as disclosed at column 13, lines 1-8. It is inherent that some buffer control much be exerted in order to control the buffer to do anything, thereby reading of claimed buffer controller.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing wherein said buffer controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory, as taught by Kato, for the purpose of synchronously transmitting data at specific timing.

Regarding claim 7, the examiner maintains that it was well known in the art to provide a transfer means for transferring the data read out from said buffer memory to the printhead, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses a printing data memory which stores printing data of a raster format and the buffer memory storing raster data of predetermined bits in correspondence with the respective printing elements (column 8, lines 10-13, column 7, lines 44-49); and transfer means for transferring the data read out from said buffer memory to the printhead (column 9, lines 20-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing a transfer means for transferring the data read out from said buffer memory to the printhead, as

taught by Kato, for the purpose of providing the data in the print data store and buffer in a well known format and transferring data to the printhead from the buffer memory, thus providing compatibility and greater efficiency.

Regarding claim 8, changing an apparatus to a method does not make a claim patentably distinct. Takemura discloses a printing data control method in a printing apparatus which performs printing by scanning a carriage that supports a printhead having a plurality of printing elements arrayed in a predetermined direction (figure 4, column 13, line 22), on a printing medium in a direction perpendicular to the predetermined direction (column 9, lines 44-45), comprising: a buffer step of storing printing data stored in the printing data memory, in a buffer memory having a storage area corresponding to each printing element (column 16, 55-57); a parameter storage step of storing information on a number of concurrently drivable printing elements according to distributed driving for the printhead in a head parameter unit (column 37, lines 60-61, column 38, lines 63-67, column 41, lines 7-13. Takemura discloses printing at different resolutions, and correspondingly the nozzles printing with a different driving sequence. For example, Takemura discloses driving every 2 nozzles in sequence, which reads on claimed wherein the printhead performs distributed driving for a predetermined number of nozzles, as disclosed at column 56, lines 59-61. This taken with fig. 43d for 360dpi (top of page), for example, shows two nozzles used concurrently. Thus, there are a number of concurrently drivable printing elements according to distributed driving. In addition, col. 48, lines 59-67 and col. 49, lines 1-10, lines 45-50, lines 60-65 show more parameters containing information on a number of

concurrently drivable printing elements (nozzles.) Tables are pre-stored that pertain to driving of the nozzles. In addition, data can be modified and it would have at least been obvious to one of ordinary skill in the art to save that modified data if necessary in order to be able to perform printing quicker for the similar scenario without have to wait for extra processing and calculation. Similarly, buffer control tables are sent and registered in the printer (col. 56, lines 13-16) and it would have similarly been at least obvious to store that information for further use that would be fulfilled quicker. It is inherent that there must have been a parameter storage step in order for the information to be stored. As the printing system stores parameters for the head it is or inherently contains a head parameter unit.); and a buffer control step of controlling, in accordance with the information stored in the head parameter unit, processing of reading out the printing data stored in the printing data memory and storing the printing data in the buffer memory, and processing of reading out the printing data stored in the buffer memory (column 53, lines 35-38, column 16, lines 55-57, 62-64, column 54, lines 18-19, 57-58, column 55, lines 5-9. Takemura discloses that print head configuration determines buffer read out and placement. Since Takemura also disclosed read out and placement from the print data store to the buffer based on the storage locations dictated in the print buffer, and that the head configuration dictated gaps in the buffer, then this would read on what is claimed above. Takemura discloses that the buffer readout sequence is change in correspondence with the change in nozzle firing sequence; as disclosed at column 82, lines 15-18, column 83, lines 25-34 and figure 47.); and a driving control step of controlling the distributed driving of the plurality of printing elements in the

printhead according to the information stored in the head parameter unit (it was disclosed earlier how information about print head driving is stored (thus inherently driving the plurality of printing elements in the printhead). Fig. 43a, col. 49, lines 51-65 disclose an example of how the information stored about driving the elements is used to provide control for the driving control means. In addition, as it was discussed previously how the modifications to the pre-stored information could be stored and the information for distributed driving could thus be stored and used for control. Inherently, as this information is used to print and drive the print head and nozzles, there is a driving control step.)

Takemura did not specifically disclose a printing data storage step of storing printing data of a raster format in a printing data memory. However, the examiner maintains that it was well known in the art to provide a printing data storage step of storing printing data of a raster format in a printing data memory, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses a printing data storage step of storing printing data of a raster format in a printing data memory (column 8, lines 10-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing a printing data storage step of storing printing data of a raster format in a printing data memory, as taught by Kato, for the purpose of providing the data in the print data store in a well known format.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura inv view of Kato and further in view of Barbour et al. (US 6705694), hereinafter referred to as Barbour.

Regarding claim 2, Takemura and Kato disclose everything as applied above for claim 1. In addition, Takemura discloses wherein the information stored in said head parameter unit includes at least the number of nozzle arrays of the printhead, the number of nozzles which constitute the nozzle arrays, and nozzles to be driven in the nozzle arrays. Takemura discloses the printer having pre-loaded information for many different types of print heads (column 48, lines 65-66). In addition, Takemura discloses above reading a print head ID in order to determine characteristics about the print head. Takemura also discloses being able to receive new parameters such as driving information and buffer read out parameters (column 49, lines 46-50). In order to set up the print buffer to compensate for the elements of nozzle arrays as disclosed in this embodiment, it is inherent that the number of nozzle arrays, number of nozzles on those arrays, and the actual nozzles used for printing (which reads on claimed nozzles to be driven in the nozzle arrays) be a known value (disclosed above and column 55, lines 25-32). However, Takemura and Kato does not distinctly disclose the information actually being stored on the print head. However, the examiner maintains that it was well known in the art to provide the information actually being stored on the print head, as taught by secondary reference.

In a similar field of endeavor, Barbour discloses a high performance printing system and protocol. In addition, Barbour discloses a print head with a memory device that may store various printhead specific data (column 1, lines 48, 50-54).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura and Kato by specifically providing the information actually being stored on the print head, as taught by Barbour, for the purpose of storing the information in one place rather than another.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura in view of Kato in view of Oda (US 5838888).

Regarding claim 5, Takemura and Kato disclose everything as applied above for claim 4. Takemura discloses printing at different resolutions, and correspondingly the nozzles printing with a different driving sequence. For example, Takemura discloses driving every 2 nozzles in sequence, as disclosed at column 56, lines 59-61. Takemura discloses that the buffer readout sequence is change in correspondence with the change in nozzle firing sequence, which reads reads on claimed in accordance with a distributed driving number in reading out the print data stored in buffer memory; as disclosed at column 82, lines 15-18, column 83, lines 25-34 and figure 47. The examiner maintains that it was well known in the art to provide calculating a read address in accordance with timing, as taught by Oda.

In a similar field of endeavor, Oda discloses an image recorder. In addition, Oda discloses the print data for each data corresponding to each nozzle being timed to a clock for transfer, as disclosed at column 3, lines 65-67 and column 4, lines 1-8. Oda

discloses an address generator that aids the buffer control in reading out the necessary data at specific timings, which together with the previous discussions would then read on claimed buffer controller calculates a read address in accordance with the number of concurrently drivable printing elements in the distributed driving in reading out the printing data stored in said buffer memory; as disclosed at column 4, lines 40-52.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura and Kato by specifically providing calculating a read address in accordance with timing, as taught by Oda, for the purpose of accessing the print buffer data respective to timed nozzle firings which would aid better efficiency.

Response to Arguments

Applicant's arguments filed 4/18/2008 have been fully considered but they are not persuasive. The amendments provided still land within the scope of the previous references. Specifically, the applicant purported that Takemura did not teach storing information on a number of concurrently drivable printing elements according to distributed driving for a printhead in a head parameter unit, controlling, in accordance with the information stored in the head parameter unit, processing of reading out printing data stored in a printing data memory and storing printing data in a buffer memory, and processing of reading out the printing data stored in the buffer memory, and controlling distributed driving of the plurality of printing elements in the printhead according to the information stored in the head parameter unit. However, the office action provides storing information on a number of concurrently drivable printing

elements according to distributed driving for the printhead in a head parameter unit (column 37, lines 60-61, column 38, lines 63-67, column 41, lines 7-13. Takemura discloses printing at different resolutions, and correspondingly the nozzles printing with a different driving sequence. For example, Takemura discloses driving every 2 nozzles in sequence, which reads on claimed wherein the printhead performs distributed driving for a predetermined number of nozzles, as disclosed at column 56, lines 59-61. This taken with fig. 43d for 360dpi (top of page), for example, shows two nozzles used concurrently. Thus, there are a number of concurrently drivable printing elements according to distributed driving. In addition, col. 48, lines 59-67 and col. 49, lines 1-10, lines 45-50, lines 60-65 show more parameters containing information on a number of concurrently drivable printing elements (nozzles.) Tables are pre-stored that pertain to driving of the nozzles. In addition, data can be modified and it would have at least been obvious to one of ordinary skill in the art to save that modified data if necessary in order to be able to perform printing quicker for the similar scenario without have to wait for extra processing and calculation. Similarly, buffer control tables are sent and registered in the printer (col. 56, lines 13-16) and it would have similarly been at least obvious to store that information for further use that would be fulfilled quicker. It is inherent that there must have been a parameter storage step in order for the information to be stored. As the printing system stores parameters for the head it is or inherently contains a head parameter unit.); and a buffer control step of controlling, in accordance with the information stored in the head parameter unit, processing of reading out the printing data stored in the printing data memory and storing the printing data in the buffer

memory, and processing of reading out the printing data stored in the buffer memory (column 53, lines 35-38, column 16, lines 55-57, 62-64, column 54, lines 18-19, 57-58, column 55, lines 5-9. Takemura discloses that print head configuration determines buffer read out and placement. Since Takemura also disclosed read out and placement from the print data store to the buffer based on the storage locations dictated in the print buffer, and that the head configuration dictated gaps in the buffer, then this would read on what is claimed above. Takemura discloses that the buffer readout sequence is change in correspondence with the change in nozzle firing sequence; as disclosed at column 82, lines 15-18, column 83, lines 25-34 and figure 47.); and a driving control step of controlling the distributed driving of the plurality of printing elements in the printhead according to the information stored in the head parameter unit (it was disclosed earlier how information about print head driving is stored (thus inherently driving the plurality of printing elements in the printhead). Fig. 43a, col. 49, lines 51-65 disclose an example of how the information stored about driving the elements is used to provide control for the driving control means. In addition, as it was discussed previously how the modifications to the pre-stored information could be stored and the information for distributed driving could thus be stored and used for control. Inherently, as this information is used to print and drive the print head and nozzles, there is a driving control step.) Takemura provides and/or motivates storing information and having information about nozzles. Takemura shows every two nozzles shifting in a distributed driving fashion that operate concurrently. As distributed driving information was thus provided and performed, there inherently was driving control. The rest of the limitations

were previously provided, and in combination with the further elucidation provided, are suitably read upon.

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM C. STOREY whose telephone number is (571)270-3576. The examiner can normally be reached on Monday - Friday Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William C Storey/
Examiner, Art Unit 2625

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